

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
<p>Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.</p>				
1. REPORT DATE	2. REPORT TYPE Viewgraphs		3. DATES COVERED	
4. TITLE AND SUBTITLE NexGenBus Simulation Brief (Viewgraphs)		5a. CONTRACT NUMBER 5b. GRANT NUMBER 5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Sid Jones		5d. PROJECT NUMBER 5e. TASK NUMBER 5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Air Warfare Center Aircraft Division 22347 Cedar Point Road, Unit #6 Patuxent River, Maryland 20670-1161		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Naval Air Systems Command 47123 Buse Road Unit IPT Patuxent River, Maryland 20670-1547		10. SPONSOR/MONITOR'S ACRONYM(S)		
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution is unlimited.				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF: a. REPORT Unclassified		17. LIMITATION OF ABSTRACT b. ABSTRACT Unclassified c. THIS PAGE Unclassified	18. NUMBER OF PAGES Unclassified	19a. NAME OF RESPONSIBLE PERSON Sid Jones
				19b. TELEPHONE NUMBER (include area code) (301) 342-1601

NexGenBus Simulations

Details a Modeling and Simulation
effort for the Next Generation
Instrumentation Bus (NexGenBus)
Program

Simulation Overall Objectives

- Simulate Fibre Channel Topologies
- Simulate Message Latency and Throughput
- Simulate effect of Upper Layer Protocols
- Simulate different Classes of Service
- Simulate Synchronization

Simulation Method

- Generate Network Modeling and Simulation Plan
- Develop Baseline Model
- Build Lab Network
- Perform Verification on Baseline Model
- Document Initial Simulation Results

10/4/99

3

Simulation Method (cont'd)

- Generate Expanded Model Capabilities and Assumptions Document
- Build Small, Medium (today's max) and Large (tomorrow's max) Simulations
- Document results of Small, Medium and Large Simulations

10/4/99

4

Baseline Model

- Demonstrate the ability to produce model that matches the performance characteristics of a duplicate lab network
- FXLP protocol simulation in each transaction
- Fibre Channel data link uses vendor specifications

10/4/99

5

Lab Network

- Lab consists of two Pentium PC's
- NT 4.0
- Systran PCI card with FXLP drivers
- Twinax wires PC to PC
- Visual C++ program

10/4/99

6

Initial Model Results

- All file transfers performed 1000 times for statistical averages
- Simulation and Lab test throughput match within 5%
- Fibre Channel link not utilized over 50% during any of the file transfers
- Simulation and Lab message latencies match up to the 200Kbytes file size

10/4/99

7

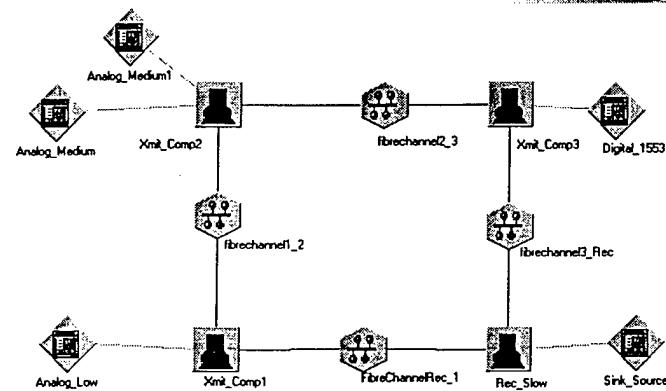
Expanded Models

- Objective is to build on initial model to simulate small, medium and large NexGenBus Instrumentation system
- models consist of sources and sinks
- Models do not simulate at the physical or data encoding layer
- TCP/IP lab network tested

10/4/99

8

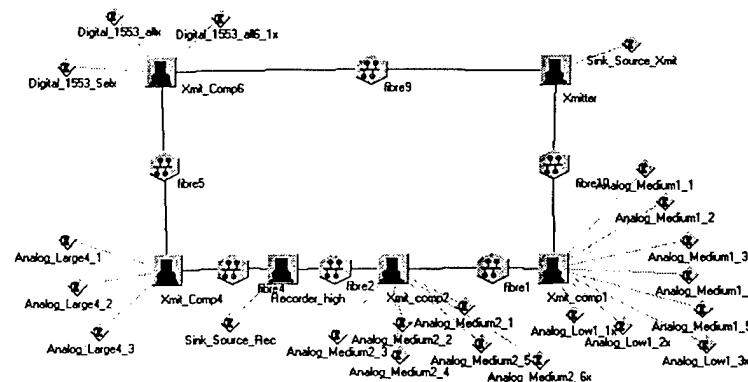
Small Simulation



10/4/99

9

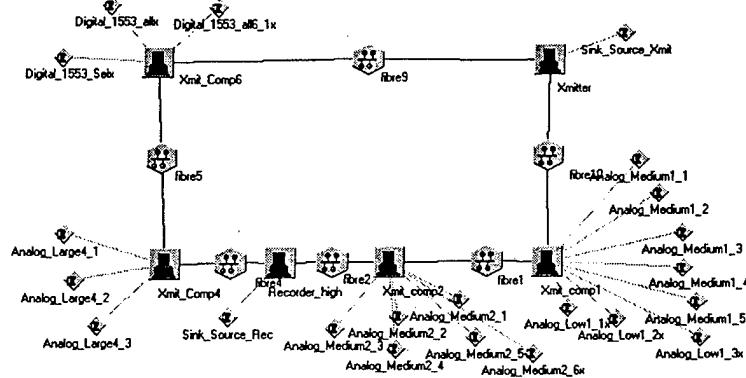
Medium Simulations



10/4/99

10

Large Simulations



10/4/99

11

Expanded Model Results

- Talk about noticeable delay for small, medium and large models
- No topology changes on small, medium and large models
- class of service effects on small, medium and large models
- TCP/UDP/IP ULP discussions

10/4/99

12